Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/886,193	CRADDOCK ET AL.
	Examiner	Art Unit
	Ramy M. Osman	2157

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>25 February 2005</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-42</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-42</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Status of Claims

1.   This communication is responsive to the supplemental amendment filed on February 25,

2005. Claims 1-42 are pending. The rejections cited are as stated below.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

3.   Claims 1-5,7-13,15-19,21-27,29-33 and 35-41 rejected under 35 U.S.C. 102(e) as

being anticipated by Pettey et al (US Patent No 6,594,712).

4.   In reference to claims 1,15 and 29, Pettey teaches a method, a program and a

corresponding data processing system, having a host, for performing an input/output transaction,

comprising:

sending a memory address of a request to an adapter, via a first remote direct memory

access over a network (column 1 lines 15,16 & 27-53, column 6 lines 15-30 & 45-55, column 11

lines 27-32, column 15 lines 5-30 and figure 1, Pettey discloses sending a virtual address via

RDMA);

retrieving the request from the host, under the control of the adapter, via a second remote

direct memory access over the network; and initiating, under the control of the adapter, a remote

direct memory access transfer with the host responsive to the request (column 1 lines 27-53,

column 11 lines 31-37, column 15 lines 5-30 and figure 16, Pettey discloses retrieving request

and transfer via RDMA).

5.   In reference to claims 2,16 and 30, Pettey teaches the method, the program and the data

processing system respectively of claims 1,15 and 29, wherein the transfer includes the adapter's

reading memory from the host (column 1 lines 40-45 and column 15 lines 5-15).

6.   In reference to claims 3,17 and 31 Pettey teaches the method, the program and the data

processing system respectively of claims 1,15 and 29, wherein transfer includes the adapter's

writing to memory of the host (column 1 lines 40-45 and column 15 lines 15-30).

7.   In reference to claims 4,18 and 32 Pettey teaches the method, the program and the data

processing system respectively of claims 1,15 and 29, wherein the request includes remote direct

memory access parameters (column 12 line 57 – column 13 line 57).

8.   In reference to claims 5,19 and 33 Pettey teaches the method of claim 4,18 and 32

respectively, wherein the remote direct memory access parameters include at least one of a

transaction ID, a list of request and data remote memory data segments, a type of storage

command, an identification of a storage device, an address on a storage device, and a data length

(column 13 lines 17-57).

9.   In reference to claims 7,21 and 35, Pettey teaches a method, a program and a data

processing system respectively, having an adapter, for performing an input/output transaction,

comprising:

Receiving, over a network via a first remote direct memory access, the address of a request from a host (column 1 lines 15,16 & 27-53, column 6 lines 15-30 & 45-55, column 11 lines 27-32, column 15 lines 5-30 and figure 1, Pettey discloses sending a virtual address via RDMA);

Retrieving, over the network via a second remote direct memory access, the request; and performing a remote direct memory access transfer with the host, based on the request (column 1 lines 27-53, column 11 lines 31-37, column 15 lines 5-30 and figure 16, Pettey discloses retrieving request and transfer via RDMA)In reference to claims 8,22 and 36, Pettey teaches the method, program and data processing system respectively of claims 7,21 and 35, wherein the transfer includes reading memory from the host (column 2 lines 5-10).

10.   In reference to claims 8,22 and 36, Pettey teaches the method, the program and the data processing system respectively of claims 7,21 and 35, wherein the transfer includes the adapter's reading memory from the host (column 1 lines 40-45 and column 15 lines 5-15).

11.   In reference to claims 9,23 and 37, Pettey teaches the method of claim 8,22 and 36 respectively, further comprising: writing data from the memory to a storage device (column 1 lines 40-45 and column 15 lines 15-30).

12.   In reference to claims 10,24 and 38, Pettey teaches the method, program and data processing system respectively of claims 7,21 and 35, wherein the transfer includes writing to memory of the host (column 1 lines 40-45 and column 15 lines 5-30).

13.   In reference to claims 11,25 and 39, Pettey teaches the method of claims 10,24 and 38 respectively, further comprising:

reading, from a storage device, data to be written to the memory (column 1 lines 40-45 and

column 15 lines 5-30).

14.   In reference to claims 12,26 and 40, Pettey teaches the method, program and data

processing system respectively of claims 7,21 and 35, wherein the request includes remote direct

memory access transfer parameters (column 12 line 57 – column 13 line 57).

15.   In reference to claims 13,27 and 41, Pettey teaches the method of claims 12,26 and 40

respectively, wherein the remote direct memory access parameters include at least a transaction

ID, a list of request and data remote memory data segments, a type of storage command, an

identification of a storage device, an address on a storage device and a data length (column 13

lines 17-57).

Claim Rejections - 35 USC § 103

16.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

17.   **Claims 6,14,20,28,34 and 42 rejected under 35 U.S.C. 103(a) as being unpatentable**

by Pettey et al (US Patent No 6,594,712) in view of Avery (US Patent No. 6,813,653).

18.   In reference to claims 6,20 and 34 Pettey teaches the method, the program and the data

processing system respectively of claims 1,15 and 29. Pettey teaches an Acknowledge requested

field, which shows that an acknowledgment can be received in RDMA operations (column 12

lines 50-57). Pettey fails to explicitly teach receiving a confirmatory response via remote direct

memory access transfer from the adapter. However, Avery teaches sending an acknowledgment

message from one adapter to another adapter using RDMA operations in an Infiniband system
(column 5 lines 50-67 and column 6 line 50 – column 7 line 5).

It would have been obvious for one of ordinary skill in the art to modify Pettey by
receiving a confirmatory response via remote direct memory access transfer from the adapter so
that the RDMA operation can be acknowledged that it was completed.

19.   In reference to claims 14,28 and 42, Pettey teaches the method, program and data
processing system respectively of claims 7,21 and 35. Pettey teaches an Acknowledge requested
field, which shows that an acknowledgment can be received in RDMA operations (column 12
lines 50-57). Pettey fails to explicitly teach sending a confirmatory response via remote direct
memory access transfer from the adapter. However, Avery teaches sending an acknowledgment
message from one adapter to another adapter using RDMA operations in an Infiniband system
(column 5 lines 50-67 and column 6 line 50 – column 7 line 5).

It would have been obvious for one of ordinary skill in the art to modify Pettey by
sending a confirmatory response via remote direct memory access transfer from the adapter so
that the RDMA operation can be acknowledged that it was completed.

Response to Amendment

20.   The examiner acknowledges the amendments filed February 25, 2005 where applicant
amended claims 1,6,7,13,14,15,19-21,27-31,33-35,41 and 42.

Response to Arguments

21.   Applicant's arguments with respect to claims 1-42 have been considered but are moot in
view of the new ground(s) of rejection.

22.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this
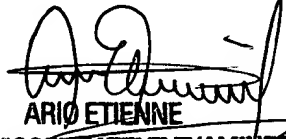
final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Ramy M. Osman whose telephone number is (571) 272-4008.

The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RMO
April 21, 2005

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